

ABSTRACT

SubH ~~Crude oil produced from wells that have a typical heavy, dark reddish /brown asphaltene-~~

based oil having a gravity of 18.6 degrees API and have no primary reservoir drive, namely, gas, water or a combination of both, rely on a gravity drainage governing

5 production method. These wells can be returned to production by a treatment comprising

addition of a non-aqueous solution of certain phosphate ester surfactants mixed with 2 percent potassium chloride water followed by air injection. Subsequent to treatment of a

production well, the non-aqueous solution of the phosphate ester and 2 percent potassium chloride water are forced into the formation using air injection and a resulting micelle

10 treating fluid is allowed to remain in the producing well for an effective period of at least

24 hours or more, preferably 72 hours. Thereafter, pumping or swabbing are then utilized to recover oil from the subterranean oil-bearing formation. The amount of phosphate ester

surfactant solution used is sufficient to permeate the oil subterranean formation in the area immediately adjacent to the producing well bore and up to a radius therefrom of about 20

15 feet. This process can also impact nearby offset producing wells.

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